INTERNATIONAL STANDARD IS 11179-3

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Information technology -- Specification and standardization of data elements

Part 3:
Basic attributes of data elements

Contents

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization.
National Bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC/JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting.

This Part 3 of the International Standard ISO/IEC 11179 was prepared by ISO/IEC JTC 1/SC14, *Information technology -- Data Element Principles.*

Other parts of International Standard 11179 are:

- **Part 1: Framework for the generation and standardization of data elements;**
- **Part 2: Classification of concepts for the identification of domains;**
- **Part 4: Rules and guidelines for the formulation of data definitions;**
- **Part 5: Naming and identification principles for data elements;**
- **Part 6: Registration of data elements.**

The annexes are for information only.

Introduction

This Part of the International Standard defines basic attributes for specifying data elements.

Data processing and electronic data interchange heavily relies on accurate, reliable, controllable and verifiable data recorded in databases.
One of the prerequisites for a correct and proper use and interpretation of data is that both users and owners of data have a common understanding of the meaning and representation of the data elements. To facilitate a shared view of data elements, a number of attributes have to be defined.

Information technology -- Specification and standardization of data elements
Part 3: Basic attributes of data elements

1. Scope and field of application

This Part of the International Standard specifies attributes of data elements. It is limited to a set of basic attributes independently of their usage in application systems, databases, data interchange messages etc.

This Part of the International Standard applies to activities including:

- **a) the definition, specification and contents of data element dictionaries;**
- **b) the design and specification of application-oriented data models, databases and message types for data interchange;**
- **c) the actual use of data in communications and information processing systems;**
- **d) interchanging or referencing among various collections of data elements.**

This set of basic attributes will have to be extended with additional attributes to enable the performance of a comprehensive data management function. No logical or physical structure of the data is implied in this Part of the International Standard.

A comprehensive data management function also requires a set of rules and procedures for classifying, defining, identifying, naming and registering data elements. These rules and procedures are outside the scope of this part and are covered in the other Parts of the International Standard.

Techniques for implementing a data element dictionary using this Part of the International Standard are outside the scope of this Part of the International Standard.

2. Normative references

The following standards contain provisions which, through reference in the text, constitute provisions for this Part of the International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Part of the International Standard are encouraged to investigate the possibility of applying the most recent editions of standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 646:1983, ***Information Interchange - ISO 7-bit coded character set for information interchange***

ISO 3166:1988, ***Code for the representation of names of countries***

ISO 6093:1985, ***Information processing - Representation of numerical values in character strings for information interchange***

3. Definitions

For the purpose of this Part of the International Standard the following definitions apply.

3.1 attribute : A characteristic of an object or entity.

3.2 attribute value : A representation of an instance of an *attribute.*

3.3 data element : A unit of data for which the definition, identification, representation and permissible values are specified by means of a set of *attributes*.

3.4 data element concept : A concept which can be represented in the form of a data element, described independently of any particular representation.

3.5 data element dictionary: An information resource that specifies, defines, and lists all relevant *data elements*.

> **NOTE:**
> **Data element dictionaries may exist at various levels, e.g.**
> **ISO/IEC Committees, international associations, industry sectors, companies, application systems.**

3.6 data element value : A value out of a set of permissible values pertaining to a data element.

4. Descriptors of a data element attribute

4.1 General descriptors

Data element attributes shall be registered and controlled in a standard way in order to achieve consistency in the exchange of information on data elements among data element dictionaries and to enable the comparison of data elements used in different data management environments.
Table 1 gives the set of general descriptors for describing a data element attribute. The column 'obligation' indicates whether a descriptor is 'mandatory' or 'conditional' or 'optional' when a data element attribute is described.

Table 1 General descriptors

descriptor of attribute	obligation	for definition see
- name	M	4.3
- definition	M	4.4
- obligation	M	4.5
- condition	C	4.6
- maximum occurrence	O	4.7
- datatype	M	4.8
- maximum size	O	4.9
- character set	C	Note 1
- language	C	Note 2
- comment	O	4.10

NOTE 1:
In general, a data element attribute is registered in a data element dictionary using one character set. The character set used, is described as the descriptor 'character set' of a data element attribute. The descriptor is valid at the data element dictionary level and shall be explicitly stated in case of interchange among dictionaries. If one (or more) of the data element attributes uses a character set that differs from the set generally used for the complete data element dictionary, than the descriptor 'character set' shall be specified.

NOTE 2:
In general, a data element attribute is registered in a data element dictionary using one language. The language used, is described as the descriptor 'language' of a data element attribute. The descriptor is valid at the data element dictionary level and shall be explicitly stated in case of interchange among data element dictionaries. If one (or more) of the data element attributes uses a language that differs from the set generally used for the complete data element dictionary, than the descriptor 'language' shall be specified. For recommendations of use see Annex D.

4.2 Mandatory descriptors

The following descriptors of data element attributes are mandatory:

- **name, see 4.3**
- **definition, see 4.4**
- **obligation, see 4.5**
- **datatype, see 4.8**

4.3 Name

Label assigned to a data element attribute.
The name shall be unique and shall be presented as an alphanumeric character string.

NOTE: The names of the basic attributes of data elements are listed in Table 2.

4.4 Definition

Description of a data element attribute that clearly distinguishes it from other data element attributes.
The definition is represented as an alphanumeric character string.

4.5 Obligation

A descriptor indicating whether a data element attribute shall always be present or sometimes be present (i.e. contain value). This descriptor may have the following values:

- **mandatory: the data element attribute shall be present.**

- **conditional: the data element attribute shall be present if condition(s) specified under 4.6 occur.**

- **optional: the data element attribute may be present or not be present.**

4.6 Condition

Circumstances under which a data element attribute shall be present.

4.7 Maximum occurrence

A descriptor specifying the maximum number of instances the data element attribute may have in the specification of one data element.

NOTE: The descriptor 'maximum occurrence' may be implemented by repeating the attribute or by presenting the attribute once with multiple values (multi-valued attribute). The implementation of the latter case requires a syntax convention for distinguishing the attribute values from each other.

Example 1 of implementation:
A data management function has decided that the attribute: 'Synonymous name' may occur 3 times in a data element specification. The three 'Synonymous names' of the data element, named : 'product code' may be presented as follows:

Name :	**product code**
Synonymous name 1:	**article number**
Synonymous name 2:	**material code**
Synonymous name 3:	**product reference number**

Example 2 of implementation:
A data management function has decided that the attribute: 'Classification scheme' may occur only once but may have 2 values in a data element specification. The two 'classification schemes' of the data element: 'Length of body of component' may be presented as follows:
(The semicolon (;) is used as separator of the two classes.)

Name:	**body length**
Classification scheme:	**IEC Component Class: Component;**
	IEC Data element type class: Quantity of space (T03).

4.8 Datatype

A descriptor specifying a set of distinct values for representing the attribute value.
Examples of datatypes for attribute values are: 'character', 'ordinal number', 'integer', 'character string'.

4.9 Maximum size

A specification of the maximum number of storage units to represent the distinct values of the datatype specified in 4.8.
Example: When the instance of 'datatype' is specified as: 'integers' and the instance of the descriptor 'maximum size' is: '3' it means that the attribute value may contain maximum 3 integers.

NOTE: For recommendations for use see Annex D.

4.10 Comment

Remark concerning the application of the attributes.

5. Basic attributes of data elements

5.1 Use of basic attributes

A specification of a data element consists of a set of attributes. This Part of the International Standard specifies a set of *basic* attributes. *Basic* means that they are frequently needed to specify a data element. *Basic* attributes may be useful for a variety of functions such as:

- **design of information processing systems;**
- **design of EDI-messages for data interchange;**
- **maintenance of data element dictionaries;**
- **data management;**
- **data administration;**
- **data element dictionary design;**
- **data element dictionary control;**
- **use of information processing systems.**

The attributes specified in this Part of the International Standard are also considered *basic* in the sense that additional attributes are required to support each of the functions enumerated above.

***Basic* also implies that the attributes are independent of:**

- **any application environment;**
- **any function of a data element (e.g. qualifier, indicator);**
- **any level of abstraction of the meaning (e.g. a representation of a generic concept like 'name of a person' or a representation of a specific concept like 'name of the driver of a truck');**
- **any grouping of data elements;**
- **any method for designing information processing systems or data interchange messages;**
- **any data element dictionary system.**

***Basic* does not imply that all standardized attributes presented in this Part of the International Standard are required in all cases. Distinction is made between those basic attributes that are:**

- **mandatory: always required;**
- **conditional: required to be present under certain specified conditions;**
- **optional: allowed but not required.**

5.2 Categories of basic attributes

5.2.1 Identifying

Attributes that are applicable for the identification of a data element.

5.2.2 Definitional

Attributes that describe the semantic aspects of a data element.

NOTE: These attributes may be derived by inheritance from characteristics of data element concepts, objects or entities.

5.2.2 Relational

Attributes that describe associations among data elements and/or associations between data elements and classification schemes, data element concepts, objects, entities.

5.2.3 Representational

Attributes that describe representational aspects of a data element.

5.2.4 Administrative

Attributes that describe management and control aspects of a data element.

5.3 Table of basic attributes

The following table lists the basic attributes grouped according to the categories of 5.2.

For a precise definition of these attributes see Clause 6.
The column 'obligation' indicates whether an attribute in a data element dictionary is 'Mandatory' (M), 'Conditional' (C) or 'Optional' (O).

Table 2: Data element attributes

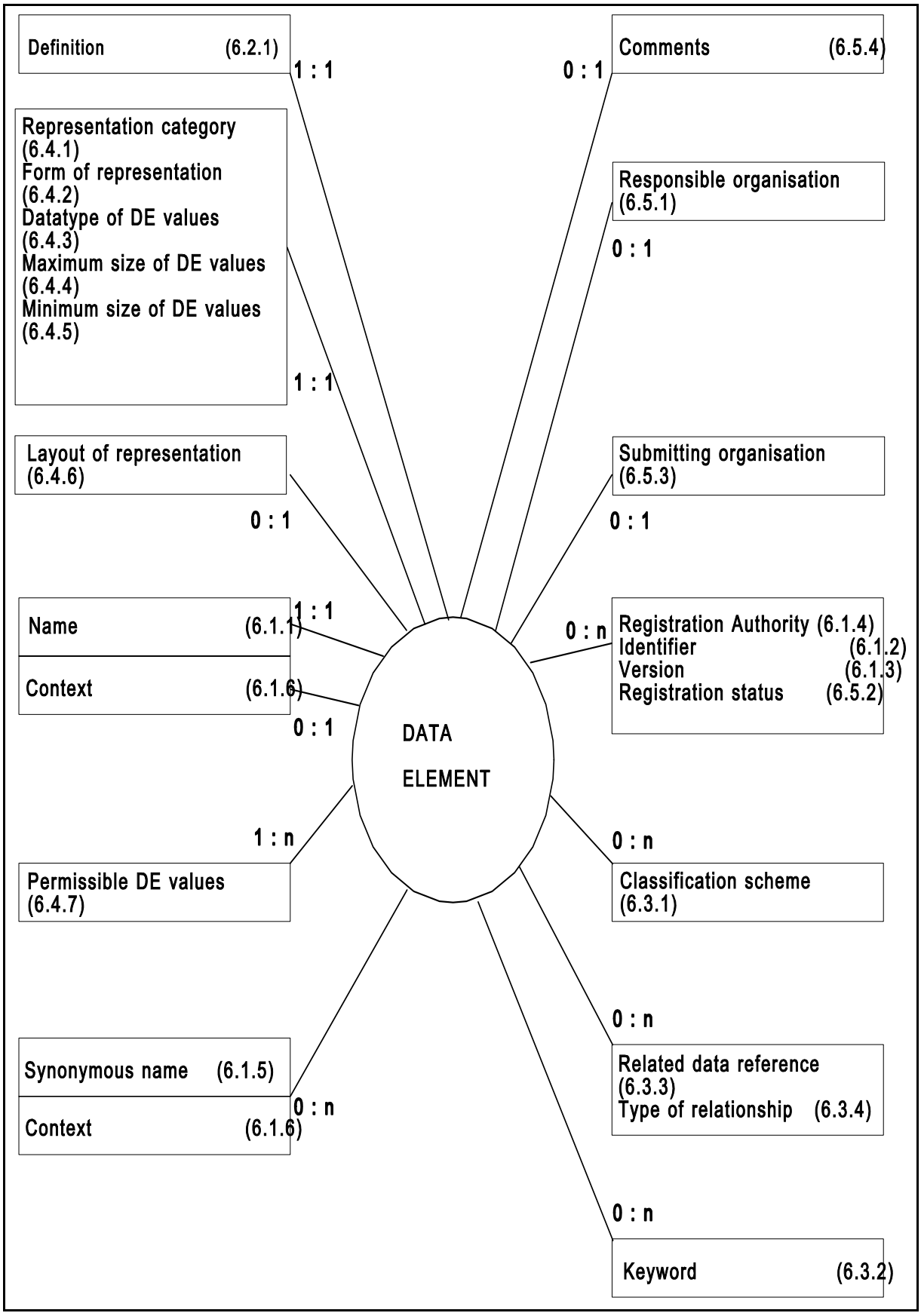
Attribute Category	Name of data element attribute		obligation	see definition
Identifying	- Name		M	6.1.1
	- Identifier		C	6.1.2
	- Version		C	6.1.3
	- Registration Authority		C	6.1.4
	- Synonymous name	O	6.1.5	
	- Context		C	6.1.6
Definitional	- Definition		M	6.2.1
Relational	- Classification scheme		O	6.3.1
	- Keyword(s)		O	6.3.2
	- Related data reference		O	6.3.3
	- Type of relationship		C	6.3.4
Represen-tational	- Representation category	M	6.4.1	
	- Form of representation		M	6.4.2
	- Datatype of data element values		M	6.4.3
	- Maximum size of data element values		M	6.4.4
	- Minimum size of data element values		M	6.4.5
	- Layout of representation		C	6.4.6
	- Permissible data element values		M	6.4.7
Admini-strative	- Responsible organization		O	6.5.1
	- Registration status		C	6.5.2
	- Submitting organization		O	6.5.3
	- Comments		O	6.5.4

5.4 Model of basic attributes

The model depicted in Figure 1 groups the attributes of a data element using two criteria: Similar cardinality and logical interdependency between attributes being clustered together.

- **Cardinality type**
  Each data element specification may contain zero or one (0:1), one and only one (1:1), zero or more (0:n) or one or more (1:n) occurrences of the attributes listed in Table 2.
  For example, a data element specification may contain zero or one attributes 'Responsible organisation', but requires one and only one attribute 'Definition'; may contain zero or more pair of attributes 'Related data reference' and 'Type of relationship' but requires one or more attributes 'Permissible data element values'.

- **Logical interdependency**
  In addition to having a similar cardinality type, attributes may depend on one another, i.e., one attribute may not be specified without other attribute(s) being specified.
  For example, both the attribute 'Synonymous name' and 'Context' shall be specified if either one is specified. Similarly, both the attributes 'Related data reference' and 'Type of relationship' shall exist if either one exists. On the other hand, even though both attributes 'Related data reference' and 'synonymous name' have the same cardinality type (0:n), they do not depend on each other to exist, thus are not grouped together.


Definition (6.2.1)
1 : 1
Comments (6.5.4)
0 : 1
Representation category (6.4.1)
Form of representation (6.4.2)
Datatype of DE values (6.4.3)
Maximum size of DE values (6.4.4)
Minimum size of DE values (6.4.5)
1 : 1
Responsible organisation (6.5.1)
0 : 1
Layout of representation (6.4.6)
0 : 1
Submitting organisation (6.5.3)
0 : 1
Name (6.1.1)
Context (6.1.6)
1 : 1
0 : 1
DATA ELEMENT
0 : n
Registration Authority (6.1.4)
Identifier (6.1.2)
Version (6.1.3)
Registration status (6.5.2)
1 : n
Permissible DE values (6.4.7)
0 : n
Classification scheme (6.3.1)
0 : n
Related data reference (6.3.3)
Type of relationship (6.3.4)
Synonymous name (6.1.5)
Context (6.1.6)
0 : n
0 : n
Keyword (6.3.2)

5.5 Mandatory attributes

The following attributes of data elements are mandatory:

- **Name, see 6.1.1**
- **Definition, see 6.2.1**
- **Representation category, see 6.4.1**
- **Form of representation, see 6.4.2**
- **Datatype of data element values, see 6.4.3**
- **Maximum size of data element values, see 6.4.4**
- **Minimum size of data element values, see 6.4.5**
- **Permissible data element values, see 6.4.7**

NOTE
A data management environment may decide that basic attributes having 'obligation': conditional or optional as specified in this Part of the International Standard, may have a higher 'obligation' in a local environment.

5.6 Additional attributes

Additional, non-basic attributes of data elements can be required e.g. for internal representation in databases or for structural relations with system and message elements.
See Annex A for examples.

6. Specification of basic attributes of data elements

As explained in Clause 5, data elements are specified by their attributes. In this Clause the set of basic attributes is specified. Each of the attributes is described by using the mandatory descriptors as presented in Clause 4. For recommendations for use of conditional descriptors see Annex D.

6.1 Identifying attributes

6.1.1 name : Name
definition : Single or multi word designation assigned to a data element.
obligation : Mandatory
datatype : Character string
comment : 1. See Part 5 of this International Standard for naming principles;
2. If naming conventions apply in certain application areas, this attribute has to be structured according to these conventions.
3. An environment controlling the data element can require that this attribute be unique within a data element dictionary.

6.1.2 name : Identifier
definition : A language independent unique identifier of a data element within a Registration Authority.
obligation : Conditional
condition : If the attribute 'Name of data element' (6.1.1) is not unique within a Registration Authority this attribute is mandatory.
Assignment of a unique identifier may be made mandatory as part of the registration procedure of any Registration Authority.
datatype : Character
comments : 1. For referencing between data elements that are controlled by different Registration Authorities, this attribute can be qualified by a designation of the Registration Authority and the attribute 'version' (see 6.1.3) to guarantee uniqueness.
2. See Part 5 and 6 of this International Standard for conventions and recommendations for establishing and controlling data element identifiers.

6.1.3 name : Version
definition : Identification of an issue of a data element specification in a series of evolving data element specifications within a Registration Authority.
obligation : Conditional
condition : This attribute is mandatory if updates on attributes occur which meet the maintenance rules for allocating new versions as set by the Registration Authority.
datatype : Character
comments : 1. See Part 6 of this International Standard for rules and recommendations on the use of versions.
2. For reasons of control of and reference among data elements, the attribute 'Version' can be used as a qualifier of the attribute 'Identifier'.

6.1.4 name : **Registration Authority**
definition : **Any organisation authorized to register data elements.**
obligation : **Conditional**
condition : **One Registration Authority shall be specified for each Identifier present.**
datatype : **Character string**
comments : **The combined attributes 'Registration Authority', 'Identifier' and 'Version' serve to uniquely identify a data element.**
A data element may be registered by multiple Registration Authorities. Part 6 of this International Standard offers further details about Registration Authorities.

6.1.5 name : **Synonymous name**
definition : **Single word or multi word designation that differs from the given name, but represents the same data element concept.**
obligation : **Optional**
datatype : **Character string**
comment : **Synonymous names are often familiar names in a certain application environment. If this is the case use attribute 'Context' (6.1.6) to specify the context.**
If more synonymous names occur the attributes 'Synonymous name' and 'Context' shall be specified as a pair.

6.1.6 name : **Context**
definition : **A designation or description of the application environment or discipline in which a name and/or synonymous name is applied or originates from.**
obligation : **Conditional**
datatype : **Character string**
condition : **This attribute is mandatory for each occurrence of the attribute 'Synonymous name' (6.1.5).**
This attribute is mandatory when the attribute 'Name' (6.1.1) occurs in an information exchange.
comment : **Assignment of the attribute 'Context' to the attribute 'Name' (6.1.1) may be made mandatory as part of the procedures of any Registration Authority.**

6.2 Definitional attributes

6.2.1 name : **Definition**
definition : **Statement that expresses the essential nature of a data element and permits its differentiation from all other data elements.**
obligation : **Mandatory**
datatype : **Character string**

6.3 Relational attributes

6.3.1 name : Classification scheme
definition : A reference to (a) class(es) of a scheme for the arrangement or division of objects into groups based on characteristics which the objects have in common, e.g. origin, composition, structure, application, function etc.
obligation : Optional
datatype : Character string
comment : Classification schemes can be used to relate data elements to functional, and/or organizational and/or technical classification schemes and/or conceptual models.
Examples: For data element named: 'weight of body of a resistor' the following classification schemes and classes thereof are valid:
- IEC Data element type class: 'mass' (K01);
- IEC Component class: 'electronic/electric component'.

6.3.2 name : Keyword
definition : One or more significant words used for retrieval of data elements.
obligation : Optional
datatype : Character string
comment : This attribute can be used for recording keywords (search keys) associated with the data element in question.

6.3.3 name : Related data reference
definition : A reference between the data element and any related data.
NOTE
The referred data may be registered in the same data element dictionary or in other dictionaries, repositories.
obligation : Optional
datatype : Character string
comment : 1. When the related data is controlled by another Registration Authority, the reference shall be a unique identifier, e.g. comprise the Registration Authority and identifier of the referred data as allocated by its Registration Authority.
2. See Part 5 of this International Standard for principles of identification of data elements.
3. A data management environment shall set rules and conventions for applying this attribute.
4. If this attribute occurs it shall be specified in pair with the attribute 'Type of relationship' (6.3.4).

6.3.4 name : **Type of relationship**
definition : **An expression that characterizes the relationship between the data element and related data.**
obligation : **Conditional**
condition : **This attribute is mandatory if the attribute 'Related data reference'occurs.**
datatype : **Character string**
comment : **1. This attribute shall be specified in pair with the attribute 'Related data reference'.**
2. Examples of type of relationships are:
'qualifier of', 'qualified by', 'subject of', 'part of', 'physical condition', 'external reference', 'higher standard', 'data element concept'.
3. A data management environment shall set rules and conventions for applying this attribute.

6.4 Representational attributes

6.4.1 name : **Representation category**
definition : **Type of symbol, character or other designation used to represent a data element.**
obligation : **Mandatory**
datatype : **Character string**
comment : **1. The representation category shall be specified by the relevant standard.**
Examples of possible representation categories:
- character representation (ISO/IEC 646)
- character/symbol representation (ISO registration no. 143)
- bar coded representation (EIA-556)
- graphical representation
2. Example: The instances of data element: 'consignment number' are bit patterns in EDI-messages and bar codes on physical packages. For this data element this attribute occurs twice, one with value: 'character representation (ISO/IEC 646)' and one with 'bar code representation EIA-556)'.

6.4.2 name : **Form of representation**
definition : **Name or description of the form of representation for the data element, e.g. 'quantitative value', 'code', 'text', 'icon'.**
obligation : **Mandatory**
datatype : **Character string**
comment : **1. See Part 2 of this International Standard for appropriate terms ('property words' or 'class words') to be used.**
2. Example 1: For the data element named: 'country of origin code' this attribute contains: 'code'.
3. Example 2: For the data element: 'product description' this attribute contains: 'text'.
4. Example 3: For the data element: 'weight of consignment' this attribute contains: 'quantitative value'.

6.4.3 name : **Datatype of data element values**
definition : **A set of distinct values for representing the data element value.**
obligation : **Mandatory**
datatype : **Character string**
comment : **Examples:**
Possible instances are: 'character', 'ordinal number', 'integer', 'real', 'scaled', 'bit', 'rational'.

6.4.4 name : **Maximum size of data element values**
definition : **The maximum number of storage units (of the corresponding datatype) to represent the data element value.**
obligation : **Mandatory**
datatype : **Integer**
comment : **1. Example 1:**
For data element: 'invoice number' the attribute 'datatype' has instance 'character' and the attribute 'maximum size of data element value' has value: '17'. The data element value of 'invoice number' shall have a maximum of 17 characters.
2. The two attributes 'maximum and minimum (see 6.4.5) size of data element values' indicate whether data element values are 'fixed' (maximum and minimum size are equal) or 'variable' (maximum and minimum size vary).

6.4.5 name : **Minimum size of data element values**
definition : **The minimum number of storage units (of the corresponding datatype) to represent the data element value.**
obligation : **Mandatory**
datatype : **Integer**
comment : **1. Example 1:**
For data element: 'product description' the attribute 'datatype' has instance 'character' and the attribute 'minimum size of data element value' has instance: '10'.
The data element value of 'product description' shall have a minimum of 10 characters.
2. The two attributes 'maximum (see 6.4.4) and minimum size of data element values' indicate whether data element values are 'fixed' (maximum and minimum size are equal) or 'variable' (maximum and minimum size vary).

6.4.6 name : **Layout of representation**

definition : **The layout of characters in data element values expressed by a character string representation.**

obligation : **Conditional**

condition : **If the data element is of the class 'quantitative data' this attribute is mandatory. If the attribute 'form of representation' is 'code' the use of this attribute is recommended if the code representation has to have a specific structure or layout.**

datatype : **Character string**

comment : **1. For quantitative data it is necessary to distinguish between integers, decimal mark and floating point notations.**

Example:

Integers may be indicated with 'n', for decimal mark the number of characters before and after the decimal mark are specified as: n(5).n(3), for floating point notations the layout convention for a value with exponents shall comply with ISO 6093: n(3).n(3)E2, where 'E2' stands for max. 2 digits for the power of 10.

2. For code representations having a specific structure or layout the type of character for each position in the code structure is important for validation purposes.

Example:

The data element 'flight number' has an international code representation structure consisting of two alphabetic characters of the airline company followed by a three-digit number identifying the flight (from starting-point to destination).

The contents of the attribute: 'layout of representation' is: 'AA999'.

6.4.7 name : **Permissible data element values**

definition : **The set of representations of permissible instances of the data element, according to the representation form, layout, datatype and maximum and minimum size specified in the corresponding attributes. The set can be specified by name, by reference to a source, by enumeration of the representation of the instances or by rules for generating the instances.**

obligation : **Mandatory**

datatype : **Character string**

comment : **When the permissible data element values are an enumeration of coded representations each data element value and instance shall be presented as a pair.**

Example 1 : Permissible data element values of data element: 'Priority indicator':

Permissible value	*instance*
1	**High**
2	**Low**
3	**None**

Example 2: Permissible data element values of data element: 'Currency qualifier':

Permissible value	*instance*
1	**insurance currency**
2	**home currency**
3	**invoicing currency**
4	**reference currency**
5	**target currency**

Example 3: A data element named: 'Country code, 2-alpha' has a domain that corresponds with the set of 2-alpha codes and corresponding names of countries appearing in the text of the current ISO 3166.

Example 4: A data element named: 'Number of employees' may contain values which are integers, equal or greater than zero.

Example 5: A data element named: 'name of head of department' has a domain that is selected from a company's register of employees and that corresponds with the formal organizational structure.

Example 6: A data element named: 'Product description' has a domain that corresponds with the set of products for which 'product identifications' are allocated and that is controlled by the 'product management function', and that conforms to the rules for defining products as laid down in document 'xyz'.

Example 7: data element 'radio frequency' has a domain which ranges from 3 KHz-300 GHz and conforms to IEC50-specifications.

6.5 Administrative attributes

6.5.1 name : **Responsible organization**
definition : **The organization or unit within an organization that is responsible for the contents of the mandatory attributes by which the data element is specified.**
obligation : **Optional**
datatype : **Character string**
comments: : **The organisation shall be considered as 'owner' of the data element.**

6.5.2 name : **Registration status**
definition : **A designation of the position in the registration life-cycle of a data element.**
obligation : **Conditional**
condition : **This attribute is mandatory during the data element life-cycle specified by any Registration Authority.**
datatype : **Character**
comment : **The type of registration status to be distinguished and the allocation of the registration status shall follow the rules that are described in the procedures for the registration of data elements (see Part 6 of this International Standard).**

6.5.3 name : **Submitting organization**
definition : **The organization or unit within an organization that has submitted the data element for addition, change or cancellation/withdrawal in the data element dictionary.**
obligation : **Optional**
datatype : **Character string**

6.5.4 name : **Comments**
definition : **Remarks on the data element.**
obligation : **Optional**
datatype : **Character string**

Annex A
(informative)

Additional attributes

In addition to the basic attributes specified in this Part of the International Standard the list of attributes can be extended depending on local data administration requirements.
The additions may refer to any of the categories identifying, definitional, relational, representational or administrative.

A.1. Additions to the category: identifying attributes

A.1.1 Short name

A shortened form of the data element name.

A.1.2 Symbol

Mark or character used as a sign for expressing some object, e.g. the characters standing for chemical elements in the periodic system (Ag = silver) or the characters standing for electrical concepts (V = Voltage).

A.2. Additions to the category: definitional attributes

A.2.1 Formula

Rule or statement in algebraic form expressing semantics of a data element.
Example: Data element 'inductance factor of soft-magnetic part'

$$\text{formula: } A_L = \frac{L}{N^2}$$

where L is the inductance of the coil when placed on the core, and N is the number of turns of the coil.

A.2.2 Additional information

Information that describes a data element by giving useful details that can not adequately appear in the definition.

NOTE:
Additional information can consists of an enumeration, a subset, a note, a remark or the like.

A.3. Additions to the category: relational attributes

Dictionaries can be used to control structures of application systems, message types or data models. Specific attributes for the control of structural relations can be defined to support 'where-used' or 'what-uses' queries.

A.3.1 Data element associations

In a data management environment it may be required to control the relation between 'composite data elements' and the 'component data elements' which form the 'composite data element'.

Example:
The composite data element: 'address' may be composed of the component data elements: 'name of addressee', 'street name', 'street number', 'city name', 'postal code', 'country name'.

A.3.2 See also

To support the correct interpretation of the meaning and use of a data element it may be useful to refer to (one or more) other data elements, which are semantically related or are derived from the same data element concept and have different representations.

Example 1:
In the specification of data element: 'shipment number' the attribute 'see also' is used to refer to the data element 'consignment number', to emphasize that the data management environment makes a distinction between the concepts 'shipment' and 'consignment'.

Example 2:
In the specification of the data element 'product description' the attribute 'see also' is used to refer to the data elements: 'product code' and 'trade name of product'.

A.3.3 Procedural information

A statement (or reference to a documented statement) about the procedural rules or constraints for the application of the data element in a certain application environment.

Example:
In the specification of data element: 'currency code', the attribute 'procedural information' is used to state that in international data interchange this data element shall always be used in conjunction with data elements specifying 'financial amounts' and 'prices'.

A.4. Additions to the category: representation attributes

A.4.1 Validity category for usage

Application for which the representation attributes are valid, e.g. electronic data interchange, database, user-interface.

Example:
In the specification of data element 'currency code' the attribute 'validity category for usage' is used to indicate that this data element is used in electronic data interchange and in databases. In the specification of the data element 'currency name', the attribute 'validity category of usage' is used to indicate that this data element is used in a user-interface.

A.5. Additions to the category: administrative attributes

A.5.1 Functional usage

An indication of a functional application environment in which the data element is used, e.g. bibliography, physical distribution, accounting, medical research, computer aided design, funds transfer.

A.5.2 Expiry date

Date at which the use of a data element expires in an application area.

Note: The date can be represented in the layout YYMMDD or CCYYMMDD according to ISO 8601.

A.5.3 Source document

Document from which definitional or representational attributes originate.

A.5.4 Date of approval
The date when the data element is accepted for inclusion in the data element dictionary.

Note: The date can be represented in the layout YYMMDD or CCYYMMDD according to ISO 8601.

A.5.5 Date of latest modification

The date of the latest change in one or more attributes of the data element being specified in the data element dictionary.

Note: The date can be represented in the layout YYMMDD or CCYYMMDD according to ISO 8601.

A.5.6 Date of receipt

The date of receipt of a maintenance request for a data element from the submitting organization.

Note: The date can be represented in the layout YYMMDD or CCYYMMDD according to ISO 8601.

A.5.7 Maintenance request number

The identification of the request from the submitting organization to the responsible organization for addition, change and/or cancellation/withdrawal of data elements or data element attributes.

A.5.8 Protection category and method

The indication of the level of information protection and the method used, e.g. 'confidential, encrypted in data interchange' or 'exclusively for internal use, encrypted in external communication'.

A.5.9 Revision

A designation for the control of administrative changes of a data element.

A.6. Additional category: internal storage attributes

A data administration can require data element attributes that describe the properties for storing data elements in databases (internal level).

A.6.1 Programming name or symbolic name

A shortened name of the data element that conforms to programming language conventions and is used in programs. Example: The data element name 'Article number' may be shortened to 'ARTNUC'.

A.6.2 Database format

The notation of the internal storage format (picture) of a data element according to the programming language convention. Example: 9(12) comp-3.

A.6.3 Validation/verification rules

The rules and/or instructions applied for validating and/or verifying data elements occurring in actual communication and/or databases, in addition to the formal screening based on the requirements laid down in the basic attributes.
Example: For the data element 'total invoice amount' the rule could be that the actual value shall be the sum of the 'invoice item amounts' plus the 'additional charges, fees, duties and taxes' specified in the invoice.

A.7. Attributes used for cross dictionary identification purposes

To control data elements in a data element dictionary one or more basic attributes of the category 'identifying attributes' can be required to guarantee uniqueness when referring to data elements registered in other data element dictionaries or in the exchange among data element dictionaries. The following basic attributes can be used for composing a unique cross dictionary identification:

- name (see Clause 6, section 6.1.1)
- context (see Clause 6, section 6.1.6)
- identifier (see Clause 6, section 6.1.2)
- version (see Clause 6, section 6.1.3)
- Registration Authority (see Clause 6, section 6.1.4)

For further recommendations see also Parts 5 and 6 of this International Standard.

Annex B
(informative)

Repetition and inheritance of attribute types

The category 'definitional attributes' contains attributes that can be valid for more sets of relational, representational and administrative attributes.

In actual implementations in a data element dictionary the following registration arrangements can be made:

a) Register complete specifications for data elements only (see example 1).

b) Register a 'data element concept' with the definitional and identifying attributes and register two data elements with the definitional attributes from the data element concept and the specific identifying, representational, relational and administrative attributes of each data element. The attribute 'relational data reference' has a reference to the 'data element concept' from which the definitional attributes are inherited (see example 2).

Note: In this case the two different entities: 'data element concept' and 'data element' shall be distinguished. In example 2 the attribute 'identifier' includes this distinction.

Example:
There are two ways of representing a 'currency identifier':

- according to a 3-alpha code and
- according to a 3-numeric code.

The definitional attributes (presented in *Italics*) for the two corresponding data elements are the same.
Example 1: (only complete data element specifications)

Name:	**Currency, letter code**	**Currency, numeric code**
Identifier:	**4217-3A**	**4217-3N**
Registration Authority:	**ISO**	**ISO**
Synonymous name:	**Alphabetic currency**	**Numeric currency**
Context:	**Funds transfer messages**	**Funds transfer messages**
Definition:	***A code for currencies***	***A code for currencies***
Keyword:	**currency, funds, money, financial amount.**	**currency, funds, money, financial amount.**
Representation category:	**character string**	**character string**
Form of representation:	**code**	**code**
Datatype of DE-value:	**alphabetic character**	**numeric character**
Maximum size DE-value:	**3**	**3**
Minimum size DE-value:	**3**	**3**
Permissible DE values:	**All 3-alpha codes of currencies of current ISO 4217.**	**All 3-numeric codes of currencies of current ISO 4217.**
Responsible organisation:	**ISO Maintenance Agency**	**ISO Maintenance Agency**
Registration status:	**Standard**	**Standard**

Example 2:

In the data element dictionary two different entities are registered: 'data element concept (DEC)' and 'data element (DE)'.

Attributes of 'data element concept (DEC)':

Name :	**Currency identifier**
Identifier:	**DEC-0001**
Registration Authority:	**ISO**
Synonymous name:	**Currency code**
Context:	**Funds transfer messages**
Definition :	**A code for currencies.**
Related data reference:	**ISO-DE-4217-3A**
Type of relationship:	**Derived data element**
Related data reference:	**ISO-DE-4217-3N**
Type of relationship:	**Derived data element**
Registration status :	**Standard**

Attributes of 'data element (DE)'

Name:	**Currency, letter code**	**Currency, numeric code**
Identifier:	**4217-3A**	**4217-3N**
Registration Authority:	**ISO**	**ISO**
Synonymous name:	**Alphabetic currency**	**Numeric currency**
Context:	**Funds transfer messages**	**Funds transfer messages**
Definition:	***A code for currencies***	***A code for currencies***
Keyword:	**currency, funds, money, financial amount.**	**currency, funds, money, financial amount.**
Related data reference:	**ISO-DEC-0001**	**ISO-DEC-0001**
Type of relationship:	**Data element concept**	**Data element concept**
Representation category:	**character string**	**character string**
Form of representation:	**code**	**code**
Datatype of DE-value:	**alphabetic character**	**numeric character**
Maximum size DE-value:	**3**	**3**
Minimum size DE-value:	**3**	**3**
Permissible DE values:	**All 3-alpha codes of currencies of current ISO 4217.**	**All 3-numeric codes of currencies of current ISO 4217.**
Responsible organisation:	**ISO Maintenance Agency**	**ISO Maintenance Agency**
Registration status:	**Standard**	**Standard**

Annex C
(informative)

Examples of the use of basic attributes of data elements

In this Annex examples are given of specifications of data elements using the attributes specified in Clause 6.
The attributes (incl. reference to relevant clause and subclause) are typed in boldface followed by the values that apply for the data elements cited. If optional or conditional data element attributes are not relevant for that data element they are omitted.

NOTE: For the purpose of this example the term 'data element' in the attribute name is sometimes presented as 'DE'.

The following examples are given:

1. data element specified in an International Standard of ISO;
2. data element specified in a National Standard;
3. data element in the UN-Trade Data Element Directory ;
4. data element in the EDIFACT Data Element Directory;
5. data element in a data element dictionary of a company;
6. data element in documentation of the Japanese Article Number Association.

Attribute name and reference to Clause and Subclause	Example 1	Example 2
Name (6.1.1):	Country identifier	EU-Country
Identifier (6.1.2):	3166	23156
Version (6.1.3):	1990	
Registration Authority (6.1.4):	ISO	European Union
Definition (6.2.1):	A code for the names of countries of the world.	Countries that currently belong to the European Union.
Keyword (6.3.2):	geopolitical entity, country	EU, country
Representation cat. (6.4.1):	character string	character string
Form of representation (6.4.2):	code	code
Datatype of DE value (6.4.3):	alphabetic character	numeric character
Max. size DE value (6.4.4):	2	3
Min. size DE value (6.4.5):	2	3
Permissible DE values (6.4.6):	All 2-alpha codes of countries of current ISO 3166, including amendments published since 1990.	All 3-numeric codes of countries belonging to the European Union as registered in the country-table controlled by the Customs Co-operation Council.
Responsible organisation (6.5.1):		European Union
Registration status (6.5.2):	ISO Maintenance Agency Standard	Standard

Attribute name and reference to Clause and Subclause	Example 3	Example 4
Name (6.1.1):	Country of origin, coded	Currency qualifier
Identifier (6.1.2):	3239	6343
Version (6.1.3):	1988	S.93A
Registration Authority (6.1.4):	United Nations	UN-EDIFACT Board
Synonymous name (6.1.5):	Origin	
Context (6.1.6):	International trade	
Definition (6.2.1):	The country in which the goods have been produced or manufactured according to the criteria laid down for purposes of application of the Customs tariff.	Code giving specific meaning to a coded currency.
Keyword (6.3.2):	geopolitical entity, country	currency, qualifier
Related data reference (6.3.3):		UNTDID-EDED-6345-S93A
Type of relationship (6.3.4):		qualifier of
Representation cat. (6.4.1):	character string	character string
Form of representation (6.4.2):	code	code
Datatype of DE value (6.4.3):	alphabetic character	character
Max. size DE value (6.4.4):	2	3
Min. size DE value (6.4.5):	2	1
Permissible DE values (6.4.6):	All 2-alpha codes of countries of current ISO 3166, including amendments published since 1990.	*permissible value* / *instance* 1 Customs valuation 2 Insurance currency 3 Home currency 4 Invoicing currency 5 Account currency 6 Reference currency 7 Target currency 8 Price list currency 9 Order currency 10 Pricing currency 11 Payment currency 12 Quotation currency 13 Recipient local currency 14 Supplier currency 15 Sender local currency 16 Tariff currency 17 Charge calculation currency
Responsible organisation (6.5.1):		EDIFACT Maintenance Agency
Registration status (6.5.2):	UN/ECE-WP4 Standard	Standard

Attribute name and reference to Clause and Subclause	Example 5	Example 6
Name (6.1.1):	Rated voltage (DC)	Article number JAN
Identifier (6.1.2):	E044	X0501
Version (6.1.3):	005	
Registration Authority (6.1.4):	IEC	JAN
Synonymous name (6.1.5):	U_Rdc	JAN-number
Context (6.1.6):	International symbol	Japanese retail sector
Definition (6.2.1):	The maximum direct voltage (in V) which may be applied continuously to a capacitor at any operating ambient temperature below the rated temperature.	Identification of a product according to the Japanese Article Number Association.
Classification scheme (6.3.1):	IEC data element type class: E06 IEC component class: CAP	
Keyword (6.3.2):	capacitor, voltage, direct, maximum	article, product, JAN
Related data reference (6.3.3):	IEC-E014	
Type of relationship (6.3.4):	Physical condition	
Related data reference (6.3.3):	IEC-E267	
Type of relationship (6.3.3):	Physical condition	
Representation cat. (6.4.1):	character string	bar code
Form of representation (6.4.2):	scalar	bars acc. to code 39
Datatype of DE value (6.4.3):	real	bar
Max. size DE value (6.4.4):	6	8
Min. size DE value (6.4.5):	3	8
Layout of representation (6.4.6):	NR3..6.3ES2	
Permissible DE values (6.4.7):	Values expressed in Voltages and meeting condition that values of IEC-E014 < values of IEC-E267.	All product identifications as registered in the current register of the Japanese Article Number Association
Responsible organisation (6.5.1):	IEC-TC3D	Japanese Article Number Ass.
Registration status (6.5.2):	Standard	Standard

Annex D
(informative)

Recommendations for the use of additional registration descriptors of attributes

When implementing basic attributes of data elements in a data element dictionary additional arrangements have to be made on the registration of the attributes, depending on the data management rules and the constraints of a data element dictionary system.
This Annex gives recommendations for the use of the following additional registration descriptors of attributes:

- **language, see 1;**
- **maximum size of attribute value, see 2.**

D.1. Language

The language in which data element attributes are specified can be valid for the entire data element dictionary, can vary per data element, or can vary per specific data element attribute.

D.1.1 Default language for entire data element dictionary

The default language is valid for the entire data element dictionary. All attribute descriptors and attribute values are registered in only one language.

D.1.2 Language varies per data element

In cases that a data element dictionary can comprise data elements that are specified in various languages, it is recommended that 'language' is a separate attribute of the category 'definitional attributes' and forms part of or qualifies the 'identifier' of the data element. All attribute descriptors and their values are then specified in the language as specified in the 'identifier'. For control purposes the attributes 'related data reference' and 'type of relationship' can be used to refer to similar data elements that are specified in more languages.
The language can be specified according to ISO 639, part 1.

Example: **A data element dictionary can contain data element specifications in the Dutch and the German language.**

data element 1:

Naam:	**Groep van hulpstoffen**
Identificatie:	**EC-1002-nl**
Taal:	**nl**
Definitie:	**De identificatie van een groep van hulpstoffen.**
Gerelateerde gegevens referentie:	**EC-1002-de**
Soort relatie:	**Duitstalig equivalent**

etc.
data element 2:

Name: **Hilfstoffgruppe**
Identifikation: **EC-1002-de**
Sprache: **de**
Definition: **Die Identifikation einer Gruppe von Hilffstoffen.**
Datenverweisung: **EC-1002-nl**
Art der Verweisung: **Niederländische Sprache**
etc.

Note:
The languages chosen can require that also the descriptor 'character set of attribute' be specified separately.

D.1.3 Language varies per data element attribute

In case 'language' can vary for each data element attribute, 'language' can be specified for each variant attribute.
The language can be specified according to ISO 639, part 1.

Example
A data management function has decided that, in addition to the default language 'English (en)'valid for the complete data element dictionary (including attribute descriptors) the attribute: 'name' can be presented in the languages: 'Dutch (nl)', 'French (fr)' and 'German (de)'. The language variants of 'name' then become separate attribute pairs: 'name' and 'context'. The attribute descriptor and its value are presented in the specified language.

data element:
Name : **Dispatch date**
Naam: **Verzenddatum**
Context: **nl: Dutch language**
Nom: **Date d'expedition**
Context: **fr: French language**
Name: **Versanddatum**
Context: **de: German language**
Definition: **The date at which goods are dispatched from the senders premises.**
etc.

D.2. Maximum size of attribute values

The following table gives recommendations for the maximum size for attribute values (see Clause 4, section 4.9).
If no recommendation is given a hyphen (-) indicates that the maximum is 'infinite'.

Table 3: Recommendations for the maximum size of attribute values

Attribute Category	Name of data element attribute	maximum size of attribute values (in characters)
Identifying	- Name	80
	- Identifier	15
	- Version	5
	- Registration Authority	35
	- Synonymous name	80
	- Context	80
Definitional	- Definition	-
Relational	- Classification scheme	35
	- Keyword(s)	-
	- Related data reference	-
	- Type of relationship	-
Represen-tational	- Representation category	35
	- Form of representation	-
	- Datatype data element value	35
	- Maximum size data element value	5
	- Minimum size data element value	5
	- Layout of representation	15
	- Permissible data element values	-
Admini-strative	- Responsible organization	80
	- Registration status	15
	- Submitting organization	80
	- Comments	-